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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,269	02/20/2004	Jeffrey E. Ungar	156900-0025 (P009)	7329
1622	7590	03/07/2006	EXAMINER	
IRELL & MANELLA LLP 840 NEWPORT CENTER DRIVE SUITE 400 NEWPORT BEACH, CA 92660			VY, HUNG T	
			ART UNIT	PAPER NUMBER
			2821	

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/783,269	<b>Applicant(s)</b> UNGAR ET AL	
	<b>Examiner</b> Hung T. Vy	<b>Art Unit</b> 2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on the RCE filed on 1/20/2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

### **DETAILED ACTION**

1. As of entry of amendment filed 1/20/2006, claims 1-14 are pending in this application.

### **Drawings**

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "an optical frequency mixer" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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Based on the objected ~~the~~ drawing, the claims are understood and examined as following.

### Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

35 U.S.C. § 102(e), as revised by the AIPA and H.R. 2215, applies to all qualifying references, except when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. For such patents, the prior art date is determined under 35 U.S.C. § 102(e) as it existed prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. § 102(e)).

4. Claims 1-14 are rejected under 35 U. S. C. § 102 (e) as being anticipated by Evans et al., U.S. Patent. No. 6,853,666.

Claims 1, 3, 6, 8, 11 and 13, Evans et al. disclose a semiconductor laser and a method for operating a semiconductor laser, comprising: a first optical gain element 1402 that generates a first light beam having a first optical frequency; a second optical gain element 1402 that generates a second light beam having a second optical frequency (See fig. 14 or see column 11, line 56-61); an optical frequency mixer 3 includes a waveguide optically (See column 11, line 60) that is coupled to said first 1402 and second gain elements 1402 and generates a polarization wave at a third optical frequency; and near-field phase grating 8 that phase modulates the polarization wave to

couples a power from the polarization wave to an electromagnetic wave propagating at the third optical frequency (See fig. 1,2 or 14).

Claims 2, 7 and 12, Evans et al. disclose different kind of wavelength depend on the grating 8 (See column 4, line 30-58) so it is inherent Evans et al. disclose the third optical frequency is in the mid-infrared, long-infrareds or terahertz regions.

Claims 4, 9 and 14, Evans et al. disclose the electromagnetic wave propagates in a direction essentially perpendicular to a propagation direction of the first and second light beams (See column 5, line 62-67).

Claims 5, and 10 Evans et al. disclose the semiconductor laser is fabricated with group III-V material (See column 13, line 53-55).

5. Claims 1, 3, 6, 8, 11 and 13 are rejected under 35 U. S. C. § 102 (b) as being anticipated by Uchida, U.S. Patent. No. 5,757,832.

Claims 1, 3, 6, 8, 11 and 13, Uchida discloses a semiconductor laser and a method for operating a semiconductor laser, comprising: a first optical gain element that generates a first light beam having a first optical frequency; a second optical gain element that generates a second light beam having a second optical frequency (See fig. 16); an optical frequency mixer includes a waveguide optically 504a (See fig.16) that is coupled to said first and second gain elements and generates a polarization wave at a third optical frequency; and near-field phase grating 503 that couples a power from the polarization wave to an electromagnetic wave propagating at the third optical frequency (See fig. 2 or 16).

### **Response to Arguments**

6. Applicant's arguments filed on 08/08/2005 have been fully considered but they are not persuasive. Applicant made the following arguments:

- a. "Evans does not disclose an optical mixer which mixes first and second light beam to create a polarization wave having a third optical frequency; Evan does not provide any disclosure that these light wave are mixed to create a polarization wave at a third optical frequency" page 5, first paragraph.
- b. "Uchida does not disclose the simultaneous generation of light beams having different optical frequencies. Uchida discloses a device that switches between operations in a transverse electric mode (TE) and a transverse electric mode (TM). Again, the undersigned requests that the Examiner cite specific column and line numbers in Uchida which discloses a mixer that mixer first and second light beams having different optical frequency to generate a polalization wave a third optical frequency." page 5, fourth full paragraph.

In response to Applicant's argument a above, the Applicant's arguments are not persuasive because the Applicant did not show where is the optical mixer in drawing. In the drawing, The Applicant only discloses the optical waveguide 12 as understanding as optical mixer so Evans discloses a semiconductor laser with two different optical gain elements that generated light beams having different frequencies (see column 8, line 53-64). Additionally, what are the different between the frequency mixer on claimed invention and the frequency mixer 3 as a waveguide optically as Evans's teaching? The drawing is not support for claims and the applicant's argument. Where is the frequency

mixer in the drawing that support for claim. Finally, Evans discloses a grating 8 that phase modulates coupled power from the polarization wave to an electromagnetic wave propagating at the third frequency (See fig. 1). Consequently, Evans does anticipate the claims of the above-entitled application.

In response to Applicant's argument **b** above, the Applicant's arguments are not persuasive because Uchida discloses the two-gain region that are electrically independent from each other (See column 7, line 30-36) so with different current control on the gain region, the grating 207 in the gain region will generate with different frequency and wavelength. Uchida disclose mixing (lossy region or phase control region, wavelength control region) beam of different frequency to create a polarization wave of a third frequency (See fig. 13). Further, Uchida discloses the mixer (504a) (see fig. 16) that mixes first and second light beam. Would the applicant show the different the Uchida's mixer and the applicant's mixer (12)?

### **Conclusion**

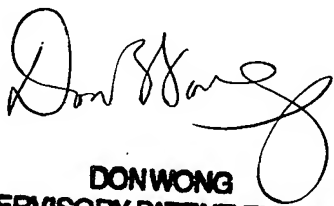
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung T. Vy whose telephone number is 571-2721954. The examiner can normally be reached on 8.30am - 5.30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571 272 1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hung T. Vy  
Art Unit 2821  
March 5, 2006.

  
**DONWONG**  
**SUPERVISORY PATENT EXAMINER**